

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

期限：12月17日

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2005/002966

International filing date (day/month/year)
17.02.2005

Priority date (day/month/year)
17.02.2004

International Patent Classification (IPC) or both national classification and IPC
F01L13/00

Applicant
HONDA MOTOR CO., LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/002966

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/002966

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-4
	No: Claims	
Inventive step (IS)	Yes: Claims	1-4
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-4
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/JP2005/002966

Re Item V.

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1 Reference is made to the following documents:

D1 : PATENT ABSTRACTS OF JAPAN vol. 2002, no. 12, 12 December
2002 (2002-12-12) & JP 2002 235515 A (SUZUKI MOTOR CORP), 23 August
2002 (2002-08-23)

- 2.1 Document D1, which is considered to represent the most relevant state of the art, discloses (*the references in parentheses applying to this document*) A valve train for an internal combustion engine, comprising a valve operating cam (14a) rotating around a rotational centre line in synchronism with a rotation of an engine; an engine valve inlet valve (10); a transmission mechanism (*rocker arm 12, swinging arm 32*) for transmitting a valve drive force of the valve operating cam (14a) to the engine valve (10) so as to operate the engine valve in open and close states, the transmission mechanism including;
- a primary oscillating member (*rocker arm 12*) oscillating about a primary oscillating centre line;
 - a secondary oscillating member (*swinging arm 32*) oscillating about a secondary oscillating centre line through abutment with the primary oscillating member so as to transmit the valve drive force via the primary oscillating member (*rocker arm 12*) to the engine valve (10),
 - a holder (*slide guide 42*) supporting the secondary oscillating member thereon in an oscillatory fashion (*oscillating around pin 36 of slide guide 42*) and wherein a drive abutment portion of the primary oscillating member (*rocker arm 12*) abuts with a follower abutment portion of the secondary oscillating portion;
 - a driving mechanism (*control cam 34*) for driving the holder (*slide guide 42*) so as to control valve properties including opening and closing timings and maximum lift amount of the engine valve in accordance with a position of the holder which is driven by the driving mechanism (*control cam 34*), wherein the holder (*slide guide 42*) oscillates about a holder oscillating centre line (*centre of shaft 34b*) which differs from the rotational centre of the valve operating cam (14a) in response to the operation of the driving mechanism and

- a cam profile having a lost motion profile for maintaining the engine valve in the closed state (*paragraph [0001] of document D1 mentions zero lift possibilities, thus the cams must have a lost motion profile*).

From this, the subject-matter of independent claim 1 differs in that in document D1:

- the holder only supports the secondary oscillating cam (instead of the first and second oscillating cam, as claimed),
- the primary and secondary oscillating centre lines do not oscillate together with the holder, and
- the aspect of the cam abutment position that approaches a specific line (*".....wherein*

as the oscillating position of the holder approaches a predetermined position where a valve operating property where a maximum lift amount becomes maximum is obtained,

a cam abutment position

where a cam lobe portion of the valve operating cam and the cam abutment portion abut with each other

approaches a specific straight line which passes through the holder oscillating centre line and the rotational centre line")

is also missing.

In view of these differences, the subject-matter of the first and only independent claim 1 is therefore novel (Article 33(2) PCT).

The implementation of a holder that supports both the primary and secondary oscillating centres would lead to a strong modification of the cylinder head because the whole idea of the arm linked around the adjustable shaft 52, the rocker arm 12 and the swinging arm 32 has to be modified. In view of this and in view of the amount of constructional modifications, the subject-matter of the first claim can be considered as inventive (Article 33(3) PCT).

2.2 Claims 2-4 are dependent on claim 1 and as such also meet the requirements of the

PCT with respect to novelty and inventive step.

Re Item VII

Certain defects in the international application

- 1 Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1 and D2) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 2 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).